

Supplement IV.C: Tutorial for Oracle
For Introduction to Java Programming
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This supplement covers the following topics:

- Connecting and Using Oracle
- Creating User Accounts
- Accessing Oracle using Java

NOTE: Please use Oracle 10.g or high with this tutorial.

0 Introduction

Oracle 10g Enterprise runs on Windows 2000, Linux and Solaris. It can support multiple users concurrently on the network. Students can access an Oracle 10g from a Web browser without installing any Oracle software.

1 Connecting and Using Oracle

There are many ways to access Oracle. The easiest is to use iSQL*Plus, which enables you to access Oracle from a Web browser. It requires no installation by the user. Suppose an Oracle 10g Enterprise database has been installed on the host `liang.armstrong.edu` with HTTP server enabled, the user can access it from a Web browser using the URL <http://liang.armstrong.edu:5560/isqlplus>, as shown in Figure 1.1.

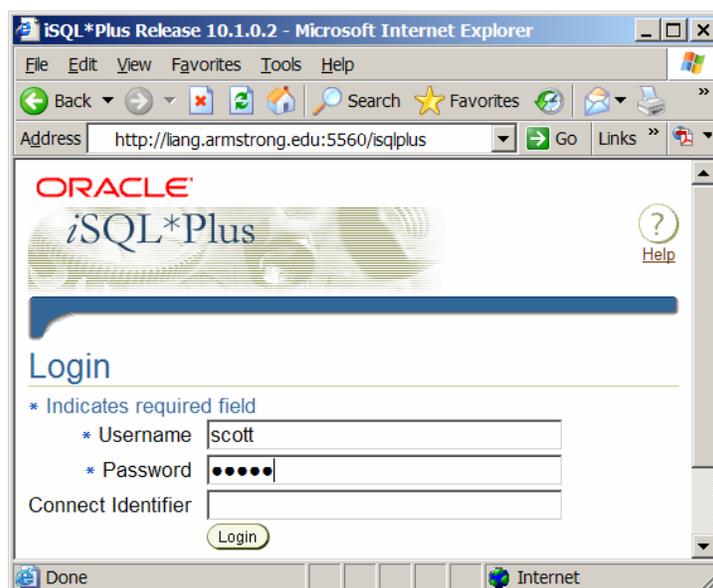


Figure 1.1

*You can start iSQL*Plus from a Web browser.*

Enter the username (e.g., scott) and password (e.g., tiger) and click Log In to log into the database. The iSQL*Plus user interface is shown in Figure 1.2.

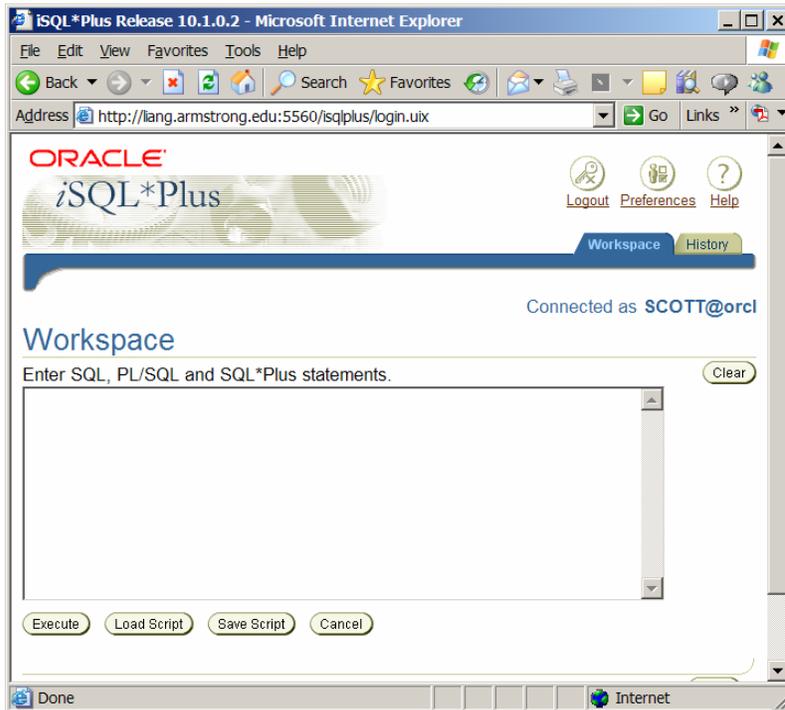


Figure 1.2

*You can enter SQL statements, save a SQL script, and load SQL script from iSQL*Plus.*

Enter the following SQL statements in the Enter Statement text box and click the Execute button. The execution result is displayed on the work screen, as shown in Figure 1.3.

```
create table State(  
  name varchar(15) not null,  
  capital varchar(25),  
  population integer);  
  
insert into State values ('Georgia', 'Atlanta', 8383915);  
insert into State values ('New York', 'Albany', 19011378);  
  
select * from State;  
  
commit;
```

The commit statement ends the current transaction and makes permanent all changes performed in the transaction.

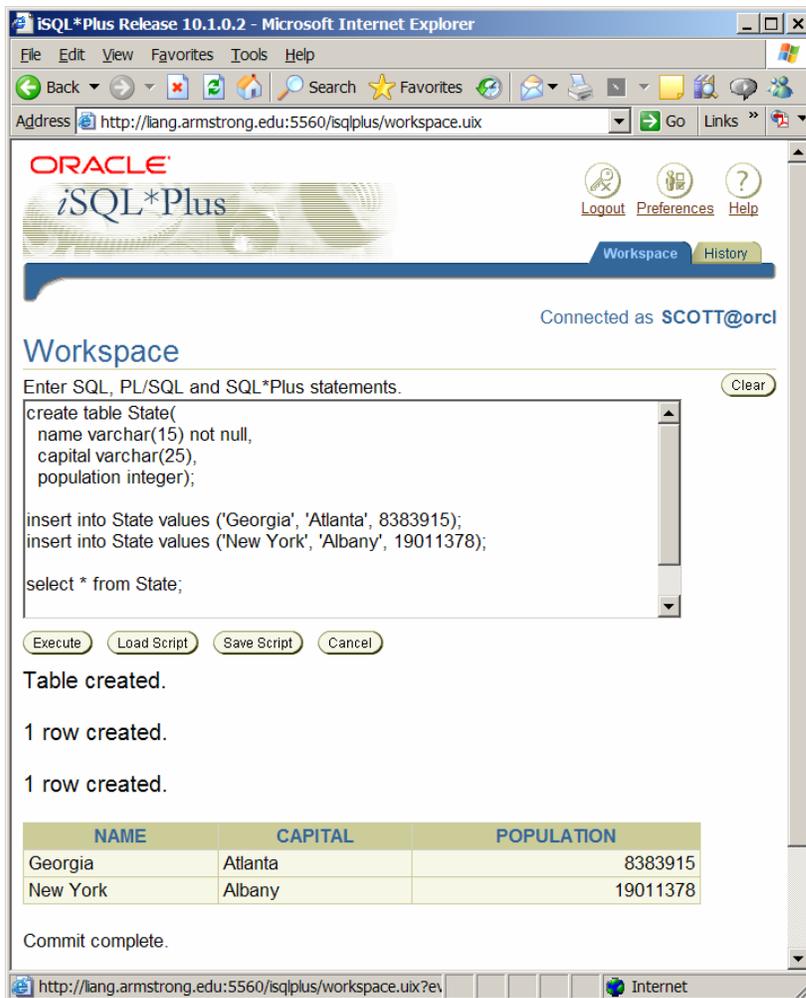
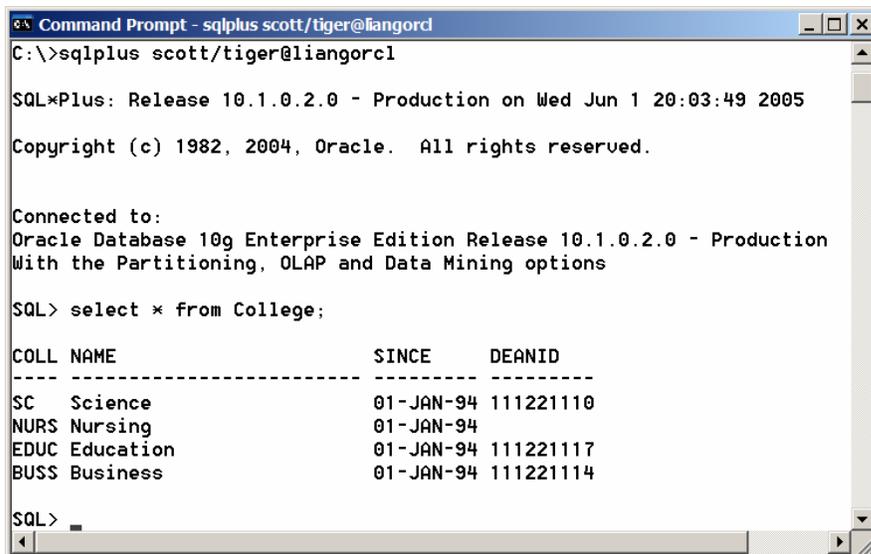


Figure 1.3

The execution result of the SQL statements is displayed in the work screen.

You can choose the Output type to display the result in the work screen, file, or a separate window. You can save the statements in a script file by clicking the Save Script button. You can load the script file from the local client by clicking the Browse button.

Another way to access Oracle is through SQL*Plus. You have to first install SQL*Plus on your computer. If Oracle database is also installed on your machine, you can access it by typing **sqlplus scott/tiger** from the command window. If Oracle database is on a different machine, you need to create an Oracle network service name for the remote database. Figure 1.4 shows an example of using SQL*Plus to access the oracle database on the host liang.armstrong.edu. The alias name for the database is liangorcl.



```
Command Prompt - sqlplus scott/tiger@liangord
C:\>sqlplus scott/tiger@liangorc1

SQL*Plus: Release 10.1.0.2.0 - Production on Wed Jun 1 20:03:49 2005

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Connected to:
Oracle Database 10g Enterprise Edition Release 10.1.0.2.0 - Production
With the Partitioning, OLAP and Data Mining options

SQL> select * from College;

COLL NAME                SINCE      DEANID
-----
SC Science                01-JAN-94 111221110
NURS Nursing              01-JAN-94
EDUC Education            01-JAN-94 111221117
BUSS Business             01-JAN-94 111221114

SQL>
```

Figure 1.4

You can start SQL*Plus from the DOS command prompt.

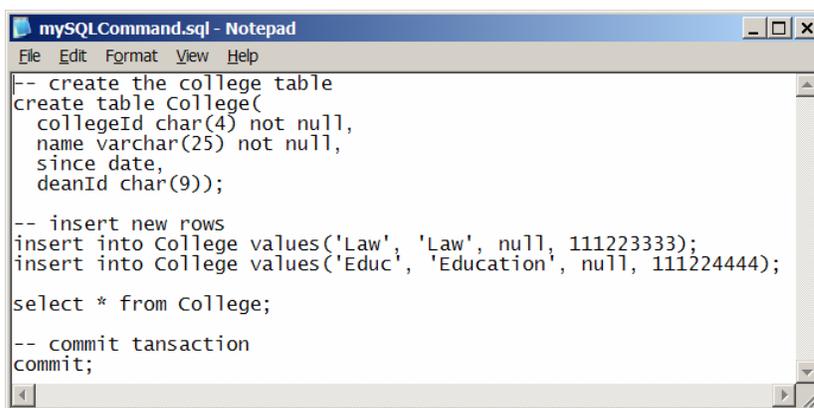
If you have typing errors, you have to retype the whole command. To avoid retyping the whole command, you can save the command in a file, and then run the command from the file. To do so, type **edit filename.sql** from the SQL command prompt as shown in Figure 1.5. This command invokes Windows Notepad as shown in Figure 1.6. Type SQL commands in the Notepad and save and exit Notepad. To comment a line, precede with two dashes. You can now run the script file by typing **@filename.sql**, as shown in Figure 1.7.



```
Command Prompt - sqlplus scott/tiger@liangord
SQL> edit c:\book\mySQLCommand.sql
```

Figure 1.5

You can use the edit command to launch an editor.



```
mySQLCommand.sql - Notepad
File Edit Format View Help
-- create the college table
create table College(
  collegeId char(4) not null,
  name varchar(25) not null,
  since date,
  deanId char(9));

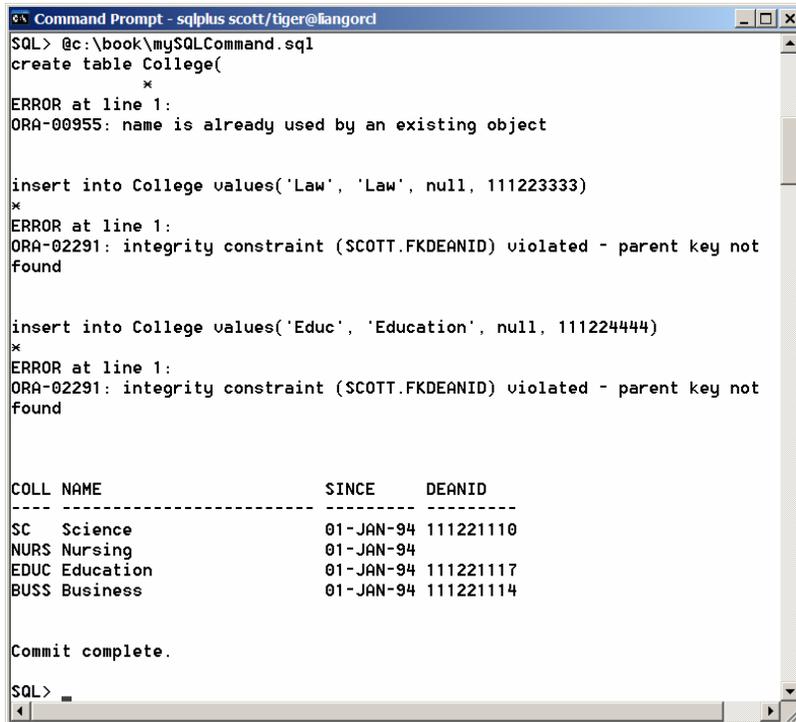
-- insert new rows
insert into College values('Law', 'Law', null, 111223333);
insert into College values('Educ', 'Education', null, 111224444);

select * from College;

-- commit transaction
commit;
```

Figure 1.6

You can save the SQL commands using Notepad.



```
Command Prompt - sqlplus scott/tiger@langord
SQL> @c:\book\mySQLCommand.sql
create table College(
      *
ERROR at line 1:
ORA-00955: name is already used by an existing object

insert into College values('Law', 'Law', null, 111223333)
      *
ERROR at line 1:
ORA-02291: integrity constraint (SCOTT.FKDEANID) violated - parent key not
found

insert into College values('Educ', 'Education', null, 111224444)
      *
ERROR at line 1:
ORA-02291: integrity constraint (SCOTT.FKDEANID) violated - parent key not
found

COLL NAME                SINCE    DEANID
-----
SC Science                01-JAN-94 111221110
NURS Nursing              01-JAN-94
EDUC Education            01-JAN-94 111221117
BUSS Business             01-JAN-94 111221114

Commit complete.

SQL>
```

Figure 1.7

You can run the SQL commands in a script file from Oracle.

As shown in Figure 1.7, an error is generated when the create table statement is executed, because the table already exists. The insert statements cause errors because they violate the primary key constraint.

2 Creating User Accounts

If you are the administrator of the database, you can create accounts for other user to access the database. You may login as a DBA and use the following SQL statements to create a user (e.g., jones).

```
create user jones identified by tiger;  
grant connect, resource to jones;
```

3 Accessing Oracle Using Java

NOTE: If you are not familiar with SQL and JDBC, see Chapter 30 on basics of SQL and how to write Java database programs.

The JDBC driver for Oracle is

oracle.jdbc.driver.OracleDriver contained in c:\book\classes12.jar. To run a Java program that accesses an Oracle database, you must put classes12.jar in the classpath.

The database URL for Oracle is jdbc:oracle:thin:@hostname:port#:oracleDBSID. For example, if the database is named orcl on host liang.armstrong.edu on port 1521, the URL is jdbc:oracle:thin:@liang.armstrong.edu:1521:orcl.

The following is a sample program

```
import java.sql.*;

public class SimpleJdbc {
    public static void main(String[] args)
        throws SQLException, ClassNotFoundException {
        // Load the JDBC driver
        Class.forName("oracle.jdbc.driver.OracleDriver");
        System.out.println("Driver loaded");

        // Establish a connection
        Connection connection = DriverManager.getConnection
            ("jdbc:oracle:thin:@liang.armstrong.edu:1521:orcl",
            "scott", "tiger");
        System.out.println("Database connected");

        // Create a statement
        Statement statement = connection.createStatement();

        // Execute a statement
        ResultSet resultSet = statement.executeQuery
            ("select firstName, mi, lastName from Student where lastName "
            + " = 'Smith'");

        // Iterate through the result and print the student names
        while (resultSet.next())
            System.out.println(resultSet.getString(1) + "\t" +
            resultSet.getString(2) + "\t" + resultSet.getString(3));

        // Close the connection
        connection.close();
    }
}
```